

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) [[A]] An isolated segment of human mitochondrial DNA or RNA of between 10 and 100 bases including a polymorphic site shown in Table 1 selected from the group consisting of ~~64, 73, 93~~, 182, ~~195~~, 235, 297, 316, 325, 680, 1040, 1442, 1706, 2358, 2416, 2789, 3337, 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, 4158, 4586, 4767, 4967, 5027, 5096, 5252, 5285, 5773, 5814, 5823, 6071, 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827, 6875, 7146, 7389, 7518, 7624, 8080, 8387, 8503, 8566, 8655, 8854, 8877, 9042, 9072, 9347, 9449, 9818, 10031, 10321, 10664, 10688, 10793, 10810, 10828, 11164, 11176, 11641, 11800, 12049, 12115, 12354, 12477, 12777, 12948, 13149, 13184, 13276, 13485, 13506, 13914, 14000, 14059, 14407, 15119, 15136, 15431, 15629, 15734, 15849, 15883, 15902, 16093, ~~16111~~, 16114, 16124, 16126, 16129, ~~16145~~, 16148, 16264, 16278, 16290, 16318, 16319, 16354, ~~16362~~, 16390, and 16519, or the perfect complement of the full length of the segment.

2. (canceled)

3. (previously presented) The segment of claim 1, wherein the polymorphic form occupying the polymorphic site is an alternative form listed in Table 1, column 2, or 4-11, wherein the alternate form is other than the base listed in Table 1, column 3 for the polymorphic site.

4. (currently amended) An allele-specific oligonucleotide that is perfectly complementary to a segment of human mitochondrial nucleic acid or its perfect complement including a polymorphic site selected from the group consisting of ~~64, 73, 93~~, 182, ~~195~~, 235, 297, 316, 325, 680, 1040, 1442, 1706, 2358, 2416, 2789, 3337, 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, 4158, 4586, 4767, 4967, 5027, 5096, 5252, 5285, 5773, 5814, 5823, 6071, 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827, 6875, 7146, 7389, 7518, 7624,

8080, 8387, 8503, 8566, 8655, 8854, 8877, 9042, 9072, 9347, 9449, 9818, 10031, 10321, 10664, 10688, 10793, 10810, 10828, 11164, 11176, 11641, 11800, 12049, 12115, 12354, 12477, 12777, 12948, 13149, 13184, 13276, 13485, 13506, 13914, 14000, 14059, 14407, 15119, 15136, 15431, 15629, 15734, 15849, 15883, 15902, 16093, ~~16111~~, 16114, 16124, 16126, 16129, ~~16145~~, 16148, 16264, 16278, 16290, 16318, 16319, 16354, ~~16362~~, 16390, and 16519, or the perfect complement of the full length of the segment.

5. (previously presented) The allele-specific oligonucleotide of claim 4 that is a probe.

6. (previously presented) The allele-specific oligonucleotide of claim 4, wherein a central position of the probes aligns with the polymorphic site of the fragment.

7. (previously presented) The allele-specific oligonucleotide of claim 4 that is a primer.

8. (previously presented) The allele-specific oligonucleotide of claim 7, wherein the 3' end of the primer aligns with the polymorphic site of the fragment.

9. (currently amended) An isolated nucleic acid comprising a segment of at least 10 contiguous bases from SEQ ID NO:30, or the perfect complement of the full length thereof, including a polymorphic site shown in Table 1 selected from the group consisting of ~~64, 73, 93,~~ 182, ~~195,~~ 235, 247, 297, 316, 325, 680, 1040, 1442, 1706, 2358, 2416, 2789, 3200, 3337, 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, 4158, 4586, 4767, 4967, 5027, 5096, 5252, 5285, 5331, 5773, 5814, 5823, 5912, 6071, 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827, 6875, 7146, 7389, 7518, 7624, 8080, 8387, 8503, 8566, 8655, 8854, 8877, 9042, 9072, 9347, 9449, 9818, 10031, 10321, 10664, 10688, 10793, 10810, 10828, 11164, 11176, 11641, 11800, 12049, 12115, 12354, 12477, 12777, 12948, 13149, 13184, 13276, 13485, 13506, 13914, 14000, 14059, 14407, 15119, 15136, 15431, 15629, 15734, 15849, 15883, 15902, 16093, ~~16111,~~ 16114, 16124, 16126, 16129, ~~16145,~~ 16148, 16264, 16278, 16290, 16318, 16319, 16354, ~~16362,~~

16390, and 16519, wherein the polymorphic site within the segment is occupied by a base other than the base shown in Table 1, column 3 ("asn base").

10. (currently amended) A method of analyzing a nucleic acid comprising;

obtaining the nucleic acid from an individual; and

identifying a base occupying a polymorphic site shown in Table 1 selected from the group consisting of ~~64, 73, 93,~~ 182, ~~495,~~ 235, 247, 297, 316, 325, 680, 1040, 1442, 1706, 2358, 2416, 2789, 3200, 3337, 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, 4158, 4586, 4767, 4967, 5027, 5096, 5252, 5285, 5331, 5773, 5814, 5823, 5912, 6071, 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827, 6875, 7146, 7389, 7518, 7624, 8080, 8387, 8503, 8566, 8655, 8854, 8877, 9042, 9072, 9347, 9449, 9818, 10031, 10321, 10664, 10688, 10793, 10810, 10828, 11164, 11176, 11641, 11800, 12049, 12115, 12354, 12477, 12777, 12948, 13149, 13184, 13276, 13485, 13506, 13914, 14000, 14059, 14407, 15119, 15136, 15431, 15629, 15734, 15849, 15883, 15902, 16093, ~~16111,~~ 16114, 16124, 16126, 16129, ~~16145,~~ 16148, 16264, 16278, 16290, 16318, 16319, 16354, ~~16362,~~ 16390, and 16519, wherein the base is a base other than the base shown in Table 1, column 3 ("asn base").

11-14. canceled

15. (currently amended) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of ~~64, 93,~~ 235, 297, and 325.

16. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 680, 1040, 1442, and 1706.

17. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 2358, 2416, 2789, and 3337.

18. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, and 4158.

19. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 4586, 4767, 4967, 5027, and 5096.

20. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 5252, 5285, 5773, 5814, 5823, and 6071.

21. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827 and 6875.

22. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 7146, 7175, 7256, 7274, 7389, 7518, and 7624.

23. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 8387, 8503, 8566, 8655, and 8784.

24. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 8854, 8877, 9042, 9072, 9221, 9347, 9449, 9818 and 10031.

25. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 10115, 10321, 10373, 10664, 10688, 10793, 10810, and 10828.

26. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 11164, 11176, 11641, 11800, and 12049.

27. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 12115, 12354, 12477, 12720, 12777, 12948, and 13149.

28. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 13184, 13203, 13276, 13485, 13506, 13650, 13789, 13803 and 13914.

29. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 13966, 14000, 14059, 14178, 14308, 14407, 14566 and 14911.

30. (previously presented) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 15119, 15136, 15244, 15431 and 15629.

31. (currently amended) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of 15734, 15784, 15849, 15883, 15902, ~~16111~~, 16114, 16124 and 16126.

32. (currently amended) The segment of claim 1, wherein the polymorphic site is at a position selected from the group consisting of ~~16145~~, 16264, 16318, and 16354.

33. (canceled)

34. (currently amended) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of ~~64, 93~~, 235, 297, and 325.

35. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 680, 1040, 1442, and 1706.

36. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 2358, 2416, 2789, 3200, and 3337.

37. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, and 4158.

38. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 4586, 4767, 4967, 5027, and 5096.

39. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 5252, 5285, 5331, 5773, 5814, 5823, 5912, and 6071.

40. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827 and 6875.

41. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 6150, 6253 and 6663.

42. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 7146, 7175, 7256, 7274, 7389, 7518, and 7624.

43. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 8387, 8503, 8566, 8655, and 8784.

44. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 8854, 8877, 9042, 9072, 9221, 9347, 9449, 9818 and 10031.

45. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 10115, 10321, 10373, 10664, 10688, 10793, 10810, and 10828.4

46. (previously presented) The method of claim 10, wherein 1, wherein the polymorphic site is at a position selected from the group consisting of 11164, 11176, 11641, 11800, and 12049.

47. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 12115, 12354, 12477, 12720, 12777, 12948, and 13149.

48. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 13184, 13203, 13276, 13485, 13506, 13650, 13789, 13803 and 13914.

49. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 13966, 14000, 14059, 14178, 14308, 14407, 14566 and 14911.

50. (previously presented) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 15119, 15136, 15244, 15431 and 15629.

51. (currently amended) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of 15734, 15784, 15849, 15883, 15902, ~~16111~~, 16114, 16124 and 16126.

52. (currently amended) The method of claim 10, wherein the polymorphic site is at a position selected from the group consisting of ~~16145~~, 16264, 16318, and 16354.

53. (currently amended). The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of ~~64, 93~~, 235, 297, and 325.

54. (previously presented). The isolated nucleic acid of claim 9, the polymorphic site is at a position selected from the group consisting of 680, 1040, 1442, and 1706.

55. (previously presented). The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 2358, 2416, 2789, 3200, and 3337.

56. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 3450, 3516, 3594, 3648, 3666, 3745, 3866, 3918, 4104, and 4158.

57. (previously presented). The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 4586, 4767, 4967, 5027, and 5096.

58. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 5252, 5285, 5331, 5773, 5814, 5823, 5912, and 6071.

59. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 6150, 6237, 6253, 6527, 6614, 6663, 6713, 6806, 6827 and 6875.

60. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 6150, 6253 and 6663.

61. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 7146, 7175, 7256, 7274, 7389, 7518, and 7624.

62. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 8387, 8503, 8566, 8655, and 8784.

63. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 8854, 8877, 9042, 9072, 9221, 9347, 9449, 9818 and 10031.

64. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 10115, 10321, 10373, 10664, 10688, 10793, 10810, and 10828.

65. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 11164, 11176, 11641, 11800, and 12049.

66. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 12115, 12354, 12477, 12720, 12777, 12948, and 13149.

67. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 13184, 13203, 13276, 13485, 13506, 13650, 13789, 13803 and 13914.

68. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 13966, 14000, 14059, 14178, 14308, 14407, 14566 and 14911.

69. (previously presented) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 15119, 15136, 15244, 15431 and 15629.

70. (currently amended) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of 15734, 15784, 15849, 15883, 15902, ~~16111~~, 16114, 16124 and 16126.

71. (currently amended) The isolated nucleic acid of claim 9, wherein the polymorphic site is at a position selected from the group consisting of ~~16145~~, 16264, 16318, and 16354.